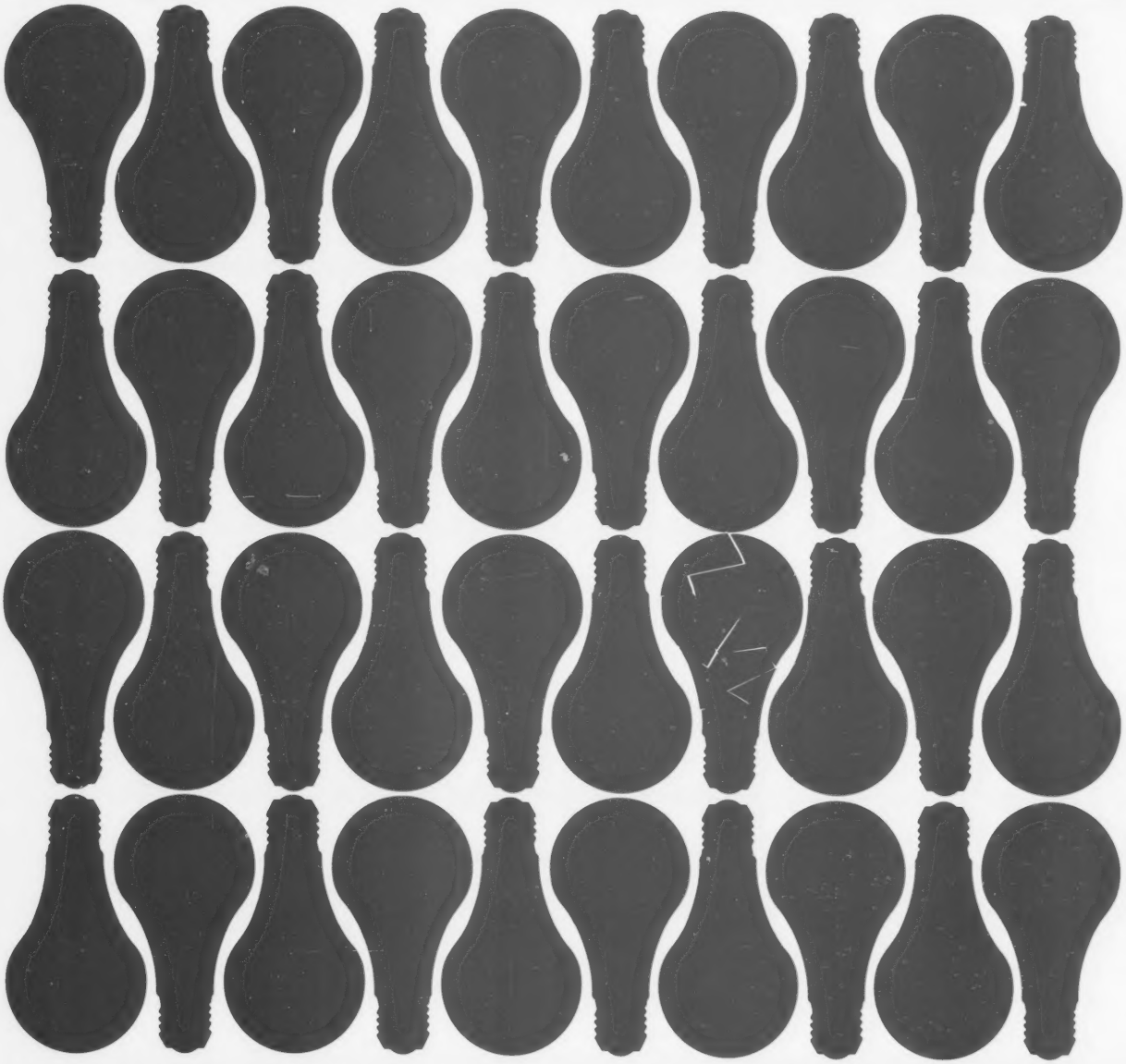
FARM INDEX

U.S. Department of Agriculture
January-February 1979

Here Today, Doubtful Tomorrow: The Energy Supply



Economics, Statistics, and Cooperatives Service

Outlook

Farmers are off to a good start in 1979—with net earnings up more than 30 percent in the past year and asset values up a tenth. Better yet, the strong tone should continue.

Farm prices are expected to remain healthy, and this year's gross income is likely to be 3 to 9 percent ahead of 1978. At the same time, production costs will rise about as much, so farmers' net earnings should continue near 1978's $26 billion.

The bright income prospects are adding luster to the farmland market. Land values this February are expected to be up about 12 percent from a year earlier. The previous year's increase was only 9 percent—the smallest gain since 1972—due to less optimism regarding farmland's income potential.

Mixed blessing. While this year's higher land values are a plus to owners, they're a problem to those looking to buy. For producers seeking to expand, the higher price tags—coupled with this year's higher interest rates—will mean a much heavier debt load.

Total farm debt, already up 14 percent during the past year to $136 billion this January, will probably close out 1979 even higher.

Food price forecast. Economists figure 6 percent is the rock-bottom increase consumers can expect for food prices this year. And it will take a lot of luck to hold the average gain to that. Weather would have to be extremely good, pork and broiler producers would need to expand, and there would have to be some letup in the inflation rate.

With poor weather and smaller than expected pork and poultry output, the average increase could be as much as 10 percent. Best bet right now, though, is for an increase somewhere in between.

The current "most likely" forecast calls for an increase of about 7-½ percent—2 percent from higher farm prices, 4 percent from increased marketing changes, and 1-½ percent from hikes for foreign foods, fish, and nonalcoholic beverages.

As usual, the increase is apt to be biggest during the first half of the year.

The big gainers. Consumers with a special fondness for beef will feel the biggest brunt of the price increases. Beef prices likely will chalk up some of the steepest gains this year—nearly 12 percent. Average prices for all red meats will be about 6 to 10 percent higher. The most noticeable hikes will come in the first two quarters of the year.

Double-digit increases are also in the offing for processed fruits and vegetables—not because of any big price rises at the farm but because of the passthrough in the system of higher raw product costs and further increases in marketing costs.

Prices for dairy products, sugar and sweeteners, cereal and bakery products, and fats and oils are expected to increase about 7 percent for the year.

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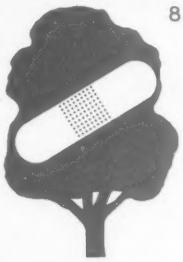

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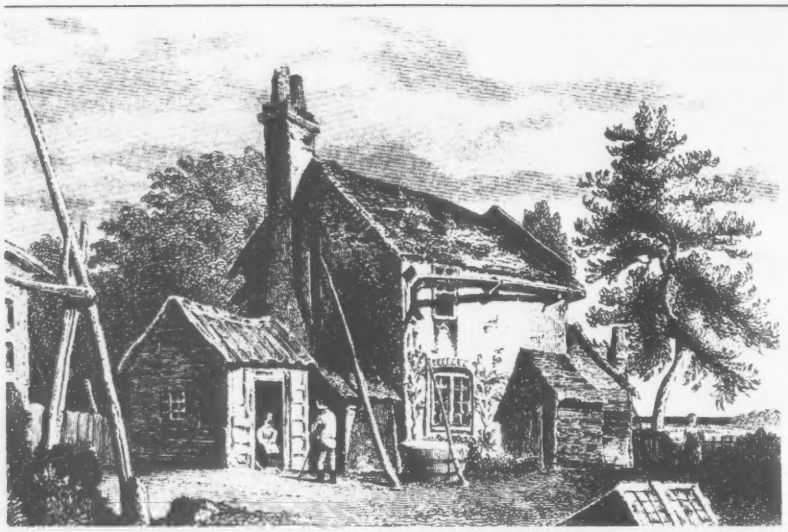
The Problem with Rural Housing



Despite this age of technology and our Nation's affluence, the outhouse is not a thing of the past.

Nor indeed is the house without running water in the kitchen, or even, sad to say, is the tar-paper shack.

And by almost any measure, housing conditions are still poorer in the country than in the cities—hard-core ghettos notwithstanding.

In 1976, 44 percent of the over 5 million homes that lacked complete plumbing and/or were overcrowded were in nonmetro areas. But here's the kicker—these areas contained less than a third of the Nation's houses. And of the 1.2 million homes lacking a complete kitchen, nearly 60 percent were in the nonmetro areas.

Income tie. As expected, bad housing is closely related to low incomes, except in rural areas.

For example, in 1976, only 41 percent of the bad housing (those lacking plumbing, overcrowded, or both) in these areas was occupied by households with incomes of less than $5,000. Families making $10,000 or more lived in another 31 percent of the under-par rural homes.

Therefore, even among higher income groups, a bigger share of people in rural areas live in poor housing than do their city cousins.

But all is not glum. Housing conditions have been improving.

In 1950, for example, 58 percent of the occupied units in nonmetro areas lacked complete plumbing, and 19 percent were overcrowded. By the fall of 1976 these percentages had fallen to 5 percent for both categories.

Building boom. A major factor accounting for this improvement is the boom in building since World War II. As more and more houses have been built, many of the older, dilapidated units have been abandoned.

To get an idea of how the boom has affected nonmetro areas, let's look at the following statistics: During the 1950's, about 420,000 units were built annually in these areas; by the 1960's the number was up to 475,000; and during the 1970's, it has escalated to 650,000. For 1978 alone, new units built will likely hit 700,000—14 percent above 1977.

While the number of new houses each year sounds small compared with the total housing supply, they add up over the years. Since 1950, they total up to over 14 million, and represent 53 percent of the houses in nonmetro areas today.

Noteworthy trend. Another trend of note: During the 1950's and 1960's, the housing supply increased more rapidly in metro than in nonmetro areas; but during the 1970's, the trend has reversed. Also, in this past decade, the number of houses has increased more rapidly in nonmetro areas.

The surge in mobile home construction has played an important role in expanding the housing supply in rural areas. During the 1970's, one out of every four new homes in these areas was a mobile unit, compared with only one in 12 in urban areas. For 1978, the figure is expected to increase to nearly one in five.

A major reason for the mobile home's popularity is price. Of those purchased in 1977, the average price was $14,000, compared with $37,000 for a conventional home. These prices do not include the cost of a lot; but for the mobile home, the price includes furniture.

Another angle. Another way of looking at the difference in price is through cost per square foot of living space. In 1977, the figure for a mobile home was $12.52, with the cost of a

conventional dwelling nearly twice that.

With this big a price differential, mobile homes have been instrumental in providing adequate low-cost housing that otherwise would have been difficult or impossible to obtain.

For example, of the 1.5 million mobile homes in nonmetro areas bought since 1970, half of the purchasers had incomes of less than $10,000 a year. Among conventional home buyers, only one-fourth had incomes this low.

Although there has been a rapid improvement in housing conditions in rural areas since 1970, not all groups have benefited equally. Blacks, the elderly, and single-person households have lagged behind.

Blacks occupied 27 percent of the bad housing in nonmetro areas in 1976, up from 20 percent in 1970. But blacks occupied only 7 percent of all nonmetro housing in both 1970 and 1976.

Plumbing pattern. For the elderly living alone or single-person household, crowding is obviously not a problem. But based upon the plumbing criteria, there's a pattern similar to that for blacks.

The elderly lived in 35 percent of the units lacking complete plumbing in 1976, compared with 32 percent in 1970. Single-person households—frequently the elderly—occupied 36 percent of such housing in 1976, well above the 26 percent in 1970. However, the greater numbers of young people living on their own have helped to up these percentages.

Single-person households have increased 37 percent in nonmetro areas and 32 percent in metro areas since 1970. Other households have increased only 17 and 11 percent, respectively.

Surprising twist. A surprising twist is that in the rural areas, the most rapid increase in single-person households has been among renters, whereas in the city, the biggest boost has come from home owners.

Reasons for the lag in improvement in housing among blacks, the elderly, and single households are many. However, two big factors stand out: a relatively low level of income; and limited access to credit, which of course, is partly due to limited income.

An analysis of the Government's 1976 Annual Housing Survey data shows only 3 percent of all rural households having conventional mortages were black, but among those mortgages insured by the Federal Housing Administration (FHA), 8 percent represented black households, compared with 11 percent of those financed with assistance from the Farmers Home Administration (FmHA). Thus, Government programs have significantly aided blacks in improving the quality of their housing.

Government efforts. Indeed, the Government has been helping to improve the quality of nonmetro housing for many residents. And the methods have varied over the decades.

During the 1950's and 1960's, housing loans made by banks and other lending institutions, but insured or guaranteed by the FHA, were the most common types of Federal credit help to nonmetro households. In the 1970's, though, the FmHA has become the major insurer.

During this decade, FmHA has been helping to construct about 75,000 homes annually—thanks in part to increased lending authority and the adoption of interest credit subsidies. That figure compares with only 16,000 annually during the 1960's. Also, FmHA loans money for repair of existing homes.

Credit picture. To see how important the FmHA is to rural residents, let's look at the overall housing credit picture.

Nationally, savings and loan associations (S&L's) make about half of all housing loans for single family homes and offer somewhat more favorable credit terms than do many other lenders.

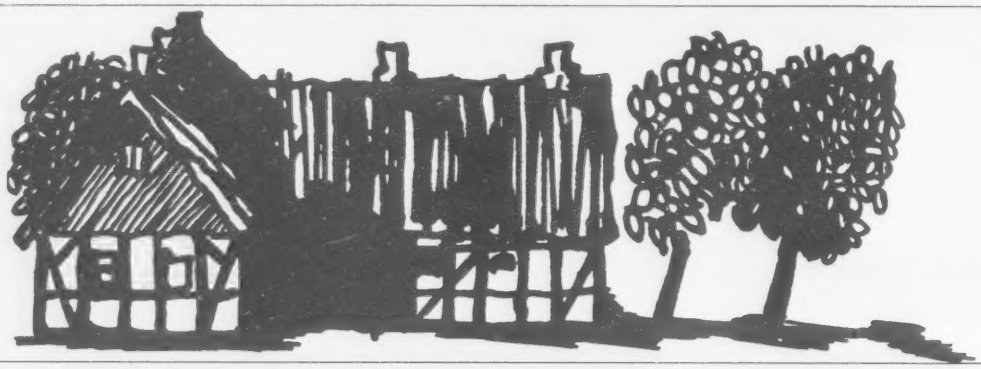
However, this source of credit is not yet available to many rural people. Of the 865 most rural counties in the nonmetro areas, 805 do not have an S&L operating within their borders. Often, a small local bank is the only accessible source of credit, and that credit capacity is often severely limited.

FmHA loans are covering part of this rural credit gap. But still, there's a long way to go.

Big gap. In 1975, outstanding housing loans of commercial banks, S&L's, and the FmHA averaged $498 per capita in the most rural counties of the nonmetro areas, compared with $1,490 per capita in the larger metropolitan counties. In the rural counties, FmHA held 34 percent of the loans.

[Based on the speech, "Status of Housing in Nonmetropolitan Areas," by Ronald Bird, Economic Development Division, presented at the National Agricultural Outlook Conference, Washington, D.C., Nov. 13-16, 1978.]

FmHA: A Lifeline to Housing



For many, the Farmers Home Administration (FmHA) is a lifeline to a decent place to live.

The FmHA is a USDA agency that helps rural residents and farmers by providing housing credit in areas not generally served by private lenders and extending housing loans to families unable to meet terms of other lenders. The target group is low- and moderate-income families.

FmHA offers six types of loans, each geared to alleviate a different housing problem. These include:

Section 502 loans. The largest number of FmHA housing loans fall in this category, which encompasses loans made to families to buy, build, or improve a modest home.

For fiscal 1979, over $3 billion has been allocated for such loans. Currently, there are around 800,000 borrowers owing over $10 billion.

Who's eligible? Any rural resident or farmer unable to obtain a loan from a private credit source, has an adjusted annual income of $15,600 or less, but has income sufficient to repay an FmHA loan.

Terms vary, depending on the income bracket. Families with adjusted incomes between $11,200 and $15,600 pay 8-½ percent interest on a loan, which can be stretched up to 33 years.

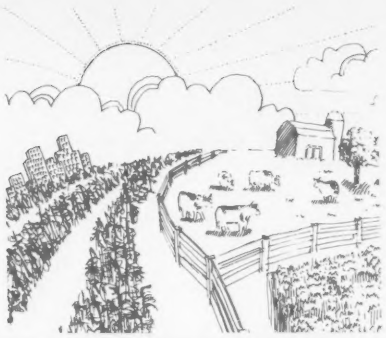
Low-income families—those earning $11,200 or less a year—can receive interest credit assistance. This subsidy, paid by FmHA, can reduce the interest rate paid by the family from 8-½ percent to as low as 1 percent. Before FmHA will step in, however, the family must pay 20 percent of its adjusted income for principle, interest, taxes, and insurance. With such a subsidy, the average effective interest rate paid by such families is about 2.9 percent.

Although not yet in operation, Congress has passed a new bill—S. 3084—which helps the very low-income family obtain adequate housing. The Act provides for a Home Ownership Assistance Program (HOAP), under which a family will pay 25 percent of its entire income towards principle, interest, taxes, insurance, utilities, and maintenance. The Government will make up the balance as a subsidy payment.

The program will be limited to areas where rental housing is not feasible as an alternative, and families will be required to have enough income to at least cover daily maintenance costs.

And there's something new for families with moderate incomes—between $15,600 and 20,000. It's a "guaranteed" rural housing program. Under this newly implemented program, loans will be made by private lenders, but FmHA will guarantee 90 percent of the amount.

Requirements: (1) The interest rate will be negotiated between the lender and the applicant; however, it cannot exceed the rate charged on other similar loans in the area; (2) The house must be modest in size, design, and cost, but may be somewhat larger and contain amenities not financed under the insured program (generally up to 1,400 square



feet of living area); (3) Applicants will be required to make a downpayment of 3 percent of the first $25,000 and 5 percent of any amount above that.

Section 504 loans and grants. Under this category, very low-income home owners are assisted in making home repairs to correct health and safety hazards. Assistance is in the form of a loan or grant, with a limit of $5,000 per family. Applicants must be 62 years old or older.

The predominate use of this program is to bring running water and install bathrooms in homes.

Section 515 rural rental housing program. After the section 502 home ownership program, the section 515 rental program has the largest number of takers. Rural rental loans can be made to individuals, profit as well as nonprofit corporations, limited partnerships, and public bodies to provide rental housing for low- and moderate-income families in rural areas.

This program has grown tremendously in the past several years. For example, in fiscal 1972, loans totaled $40 million; in fiscal 1979, there are $868 million available. The program initially provided housing only for the elderly; however, it now extends to low-income families.

The section 515 rental program has been used in tandem with the Department of Housing and Urban Development's section 8 deep subsidy program for several years to provide rental housing for very low-income families. Approximately 25,000 units have been provided in this manner during the past 2-½ years.

Section 523 self-help technical assistance grant. In many parts of the country, families who cannot afford a commercially built home are willing to join together and build them with their own labor. Generally, such groups consist of six to eight families.

The self-help technical assistance grant is used to fund the organization which provides the guidance needed in forming these groups, informs the families of loan requirements, and provides supervision during construction.

There are currently 52 active organizations in 18 States helping families to build houses under this method. Each participating family receives a section 502 loan to buy materials and to contract for any skilled work that must be obtained, such as plumbing or electrical. The organizations involved are usually nonprofit corporations; however, a few are public bodies such as housing authorities.

Section 524 and section 523 rural housing site loans. For communities without available building sites, a site loan can be made to a nonprofit corporation or public body to buy land and install streets and utilities necessary to develop a desirable subdivision. The developed sites can be for self-help housing and for other low- and moderate-income families.

Section 514 and section 516 farm labor housing loan and grant program. These sections give FmHA authority to make loans and grants to public bodies and nonprofit corporations to provide housing for a person who makes a substantial portion of his or her income from working on farms. This may apply to both migrant and permanent farmworkers in an area.

There is a special need in certain parts of the country for this type of housing, and the 1979 fiscal year budget reflects increased funding to meet the demand.

So what are some of the characteristics of FmHA borrowers, and how do FmHA loans stack up with others? The ESCS annual housing survey reveals the following statistics for 1974-76:

- The median income for FmHA borrowers was $10,433, compared with $15,679 for people getting loans from conventional lenders. Incidentally, this median income is less than for borrowers receiving loans before 1974.
- The median age of FmHA borrowers was 29.7 years.
- The percentage of loans made to black families decreased. FmHA has pledged corrective action.
- About 43 percent of the houses financed by FmHA were on public sewer and about 69 percent on public water systems.
- The predominate source of heat was electricity, with almost 80 percent using it. (Rising energy costs are probably the biggest single problem being faced by borrowers.)
- Ninety-three percent of FmHA borrowers rated their homes as excellent or good.

[Based on the speech, "Farmers Home Administration Rural Housing Programs," by L.D. Elwell, Farmers Home Administration, presented at the National Agricultural Outlook Conference, Washington, D.C., Nov. 13-16, 1978.]

Good Health: Key to a Successful Rural Community

It takes more than fertile farmland or industrial opportunities to sustain a successful rural community—able-bodied workers are also a must.

Whether on a farm or in a factory, labor productivity is a key factor to success. But health problems often lead to absenteeism, tardiness, frequent employment turnover, and poor work performance.

For example, a study from the Mississippi Delta and Ozark regions found that of 890 female household heads, nearly half indicated they had work-inhibiting health problems.

Moreover, several studies point out the scarcity of rural health care resources, particularly in the South.

Upgrading health facilities as well as health education training in these areas would not only improve the standard of living, but also profits for farms and firms; attract industry; and partly plug the "income leak" to other outside communities.

Factors in rural health care. Four forces affecting the rural health care system can be identified:

- Rural/urban population turnaround.
- Economic conditions.
- Education.
- Medical technology.

Rural/urban population turnaround. The vast rural-to-urban migration characterizing the U.S. population after World War II has halted—and even reversed. From 1970 to 1975, nonmetropolitan areas gained 6.6 percent in population, compared with only 4.1 percent for city areas.

Interestingly enough, the population increases in nonmetropolitan areas seem to be associated with retirement, enrollment at major State universities, and decentralization of industry. This trend seems likely to continue at least into the next decade.

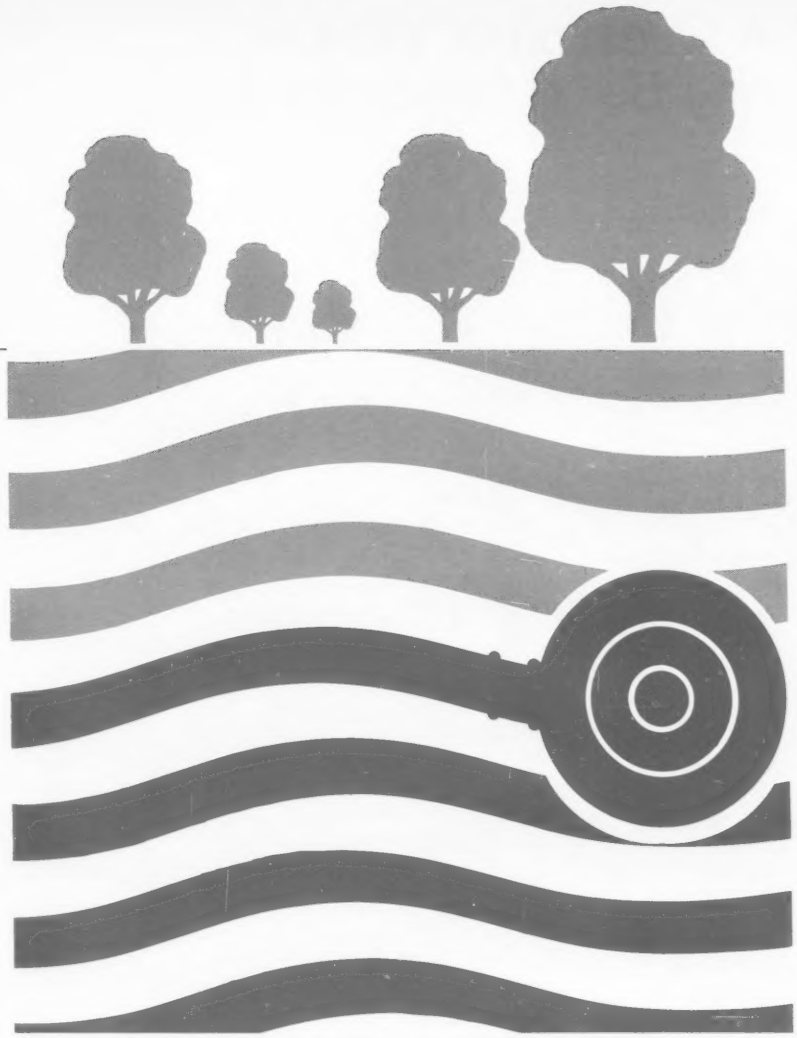
The shifting population should be considered when communities allocate medical resources. In medical care, a lot of equipment is not only expensive, it is also immobile. Therefore, where a permanent health care facility is located is critical.

Of course, it may be possible also to use temporary facilities or ones which could be modified as needed. The evidence also leans heavily in favor of keeping most of the existing facilities—smaller clinics, nursing homes, and hospitals.

Our changing population also intensifies the need for facilities for care and treatment of the aged. As the number of elderly people increases, medical costs go up due to chronic conditions associated with advanced age.

In 1900, 5 million persons were over 60 years old. By the year 2000, the number is expected to be about 42 million, or one-third greater than the present. Meanwhile, the birth is dropping. This suggests that medical care will be modified during the 1980's to increase the emphasis on an aging population.

Economic conditions. Unfortunately, health care costs are rising much more rapidly than even the rate



of inflation. And a serious economic disruption—unabated inflation, the energy crisis, strikes, or even a war—could affect public support of health services.

Many consumers, already pressed by inflation, will feel the need to substitute less expensive medical service, use less, or even do without. Particularly hard hit are the elderly.

In evaluating the health care situation, leaders need to look at those factors which contribute to the relatively rapid rise in medical care costs.

Education. Education has a lot to do with how much health services are used. For instance, children aged 5 to 14 years whose family head has more than a high school education visit their physicians twice as often per year as those whose family head has completed only 5 to 8 years of elementary school.

Education also enters into the picture in another way—training of health care workers. At this time, there are no data on the number of rural students taking health education courses. But it is clear that rural residents enrolled in vocational education classes are not preparing for health care roles at a rate equal to the rural share of the Nation's population.

During the 1972–73 school year, only one-fifth of all vocational education students in health programs identified themselves as rural residents. Improving this ratio may be one way to contribute to the adequate staffing of rural health care agencies.

Yet another major avenue for education to shape the health system is through Health Systems Agencies, as provided by the Health Planning and Resources Development Act of 1974. Such agencies have a professional staff and a governing body—the majority of which are consumers of health care.

The new advisory and planning groups have emerged by virtue of Public law 93–641, which provides a way to participate directly in shaping our future health care system.

Medical technology. Medical technology is surely a powerful force shaping our medical system. It can both modify and improve existing medical services and supplies and provide new medical hardware and expertise.

However, medical technology has the potential to add to expenses unless counterforces emerge to prevent this.

It is evident that we can expect several points of stress in the rural health care system over the next decade. But researchers should be encouraged to work creatively with political leaders on this issue to make the best use of information and resources.

Rural community involvement in health care facilities is also important, for these rural facilities represent a critical part of a successful farm community.

[Based on the manuscript, "Evaluation of Rural Health Delivery Systems: Research Needed for the 1980's," by Bernal L. Green, Economic Development Division.]

A Question of Work—And Being Ready for It

The old rule of thumb—the better you're educated, the better the chance of finding a job—doesn't always hold up.

Although education is a key factor in the job market, it isn't the only one, an ESCS study of the rural labor force shows. In fact, sex, race, and location factors can sometimes outweigh education in employment trends.

In general, rural/nonmetro residents are less likely to: (1) attend public schools with supportive services and personnel, (2) complete 4 years of high school, (3) plan a college education, (4) enter college, (5) receive vocational training, or (6) enroll in adult education programs.

Racial lines. However, when the residents are divided on racial lines, a big difference appears. In 1977, the median number of school years completed by both metro and nonmetro whites in the labor force were nearly the same. But for blacks and other races, the gap was wide: Farm males lagged their metro counterparts by over 5 years, with farm females trailing 3 years.

There is also a distinct association between formal schooling and who holds the jobs. That is, the higher the educational level, the more likely a person will be in the labor force. But again, there are exceptions.

Noteworthy exceptions. The most noteworthy is for black and other minority farm males. Farm black men in the labor force actually completed 2.4 school years less than their nonemployed counterparts. In fact, a larger percentage of the farm black men with only an eighth grade education were employed than were those with high school or college educations.

This phenomenon can be explained by the situation of farm jobs being held on to by older, less educated blacks, leaving the younger, better educated blacks unemployed, unless they go to urban areas. Thus, so far, improved education has produced no discernible advantage for farm black males.

Schooling payoff. Increased schooling does mean greater participation in the labor force for black and other minority farm females—that is, *after* the high school level. A high school education alone does not invoke more participation than does a mere elementary education.

It should be noted, however, that nonmetro women of all races who don't live on a farm are more likely to be in the labor force as currently defined (at virtually every educational level) than their farm counterparts. Perhaps this signifies greater off-farm employment opportunities.

For college-educated women, those in the country take a back seat to their city sisters in labor force par-

ticipation. This is true for women of all races. Reasons are probably the greater market demand for well-trained females in urban areas and greater freedom (or necessity) to make occupational choices there.

Farm employment. As far as kinds of jobs go, farm employment is not the dominant type in rural/nonmetro areas. Still, it's very important to the rural labor structure. And some changes have occurred along the lines of educational attainment levels of agricultural workers during the 1970's.

Educational levels of male agricultural workers 25 to 44 years old increased slightly between 1970 and 1975. But, surprisingly, the big change was for older agricultural workers.

The educational attainment level of women farm laborers and supervisors in the 45-to-64-year bracket increased 3.1 years between 1970 and 1975—to a level not far below that of younger male farmers.

Male farmers and farm managers in the 45-to-64-year bracket showed a nearly 2-year rise in education. However, male farm laborers in this age category sustained only a 0.2-year rise from a low 1970 level of 7.4 school years completed.

Education or chronology? Perhaps older male farmers and female farm laborers have taken advantage of adult education opportunities to obtain more formal schooling, while male farm laborers have not. Then too, these changes may also have been due somewhat to chronological replacement of less educated older people by better educated younger people in the 45-to-64 age group.

Since agriculture is no longer the dominant employer in rural areas, there are millions of rural people who earn their living off the farm. Blue-collar jobs attract the most workers, although the "services occupation" category has lured an increasing number during the 1970's.

Blue-collar attraction. Compared with urban areas, blue-collar jobs in nonmetro areas account for a greater percentage of the labor force: In 1974, over 39 percent, nonmetro; 32 percent, metro. For service workers, the percentage was higher in nonmetro areas than the suburbs, but slightly less than in central cities.

As might be expected, blue-collar and service jobs—both metro and nonmetro—tend to be filled by people who have a high school education or less.

Professional and other white-collar jobs, filled by people averaging over 12.5 years of education, are underrepresented in the nonmetro labor force. Only 38.5 percent of the rural workers hold these types of jobs, compared with nearly 53 percent for the central city work force, and 54 percent for the suburban.

Lower earnings. The underrepresentation of white-collar groups in nonmetropolitan areas may be partly explained by the lower earnings that they receive, compared with their metropolitan neighbors, particularly suburban.

In general, in 1973, male nonmetro professionals and mangers earned $3,000 to $4,000 less than those in the suburbs; the difference between blue-collar and service worker salaries was not as great. Women's pay followed the same basic pattern, except that their earnings were much less than the men's—roughly half in many cases.

Therefore, for both well-educated men and women, a metropolitan location is more desirable in terms of enhanced earning capacity.

Investment ranking. In fact, individual economic payoff of educational investment can be cataloged in the following descending order: metro white males, nonmetro white males, metro black males, nonmetro black males, metro white females, metro black females, nonmetro white females, and nonmetro black females.

It follows then, that better educated rural Americans would be attracted to urban areas because of greater job opportunities and superior earnings. The data, in fact, show this to be the case.

Of all nonmetro white persons over 18 who moved to urban areas during 1970–75, 46 percent had college experience, while only 20 percent had less than a full high school education. Conversely, of all metro white people over 18 who went to rural places to live, 34.5 percent were college trained, but 28.5 percent had less than 4 years of high school.

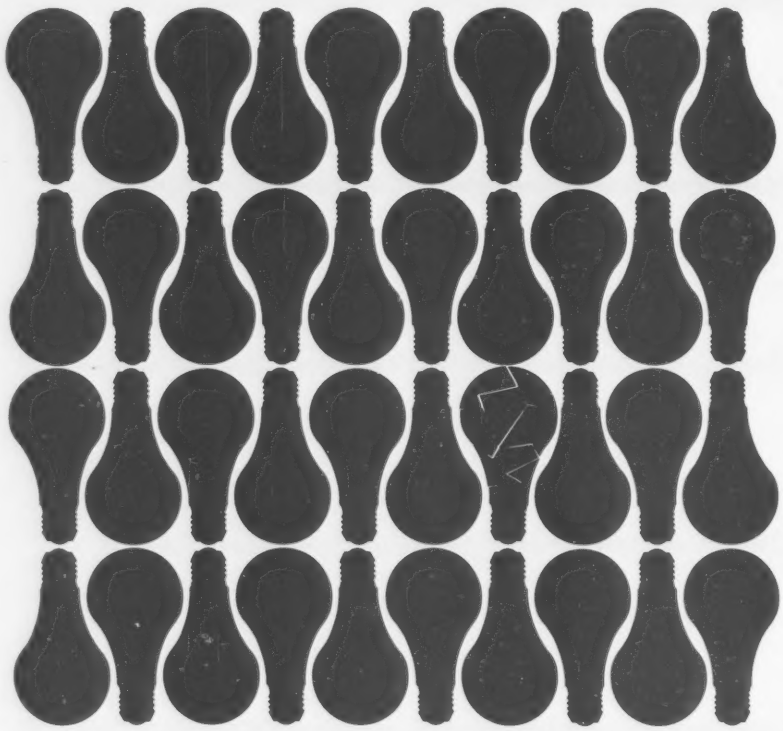
Migrating proportions. Therefore, nonmetro areas lost a higher proportion of their well-educated white population and a lower proportion of their less educated white population than cities did. The situation for blacks was somewhat similar, but the percentages of college-trained blacks were smaller.

[Based on *Rural Education and Rural Labor Force in the Seventies*, Rural Development Research Report No. 5, by Frank A. Fratoe, Economic Development Division.]

Here Today, Doubtful Tomorrow: The Energy Supply

A burning question in agriculture is whether there'll be enough energy this year. Economists say the outlook is bright, and supplies in 1979 should be adequate.

A third straight winter of severe cold—an unlikely occurence—could put a strain on supplies of most fuels used for heating, and that could drive prices up. But the experts say that even if this winter is as rough as the last two, only minor energy shortages are apt to crop up.



Good short-term outlook. In other words, the short-term supply picture is rosy. Petroleum fuels—gasoline, diesel, and other fuel oil—should be plentiful, and prices will probably rise only a little in 1979.

The size of a price increase for oil hadn't been decided by the Organization of Petroleum Exporting Countries (OPEC) at press time, but most experts figure if there's any boost in the world price, it'll probably be between 5 and 8 percent. Even then, we shouldn't feel a price rise caused by an OPEC increase at the retail level until late in 1979.

Energy Management. Overall, agriculture has been pretty good about making the most of energy resources. Using energy, farmers have sought to reduce labor costs, boost yields, and lower the risk of crop failure by "modifying" the weather through irrigation, crop drying, and heating and cooling of buildings.

And because farmers are energy managers, they need to know what the short-term situation is for major energy types.

Natural gas supplies are in good shape. Pipeline companies report they have 6.78 trillion cubic feet for sale this year; last year, during a record cold spell, 6.81 trillion cubic feet were delivered. Provisions of the recently signed Natural Gas Policy Act of 1978 should limit natural gas price increases to agricultural users to the rate of inflation in 1979.

Full tanks. Conservation and a moderate slowdown in the Nation's economy have teamed up to help bring on the second-largest LP-gas inventory in history.

Eventually, higher prices for natural gas could pull LP-gas prices up, but for the time being they're down. Farmers paid an average of 39 cents a gallon in October 1978, down 4 percent from a year earlier. The price in 1979 might be still lower.

But the cost of electric power will probably continue climbing. Farmers paid 8 percent more for electricity in 1978 than 1977, and prices this year could rise another 5-10 percent. Supplies should be more than adequate, however.

Churning generators. Total U.S. electric generating capacity has been estimated at about 500,000 megawatts, and peak needs will probably

be about 380,000 megawatts. Only the Tennessee Valley area might get shorted during peak demand periods. But food processors and other agricultural users will probably not have problems this year.

But all this information applies only to the short term—the next year or so. After that, the skies get a little cloudy—some might say threatening.

It appears the era of energy scarcity in the U.S. is here, and has been for several years, despite current short-term abundance. Oil supplies are running low; natural gas may peter out entirely by the turn of the century; and even coal, that most abundant of energy resources, isn't being mined to its fullest potential.

An ill wind. Besides forcing prices up, shortages portend little good for agriculture. A supply cutoff, even one that's temporary, would probably cause more damage to the agricultural economy than higher prices.

A disruption of energy supplies at the wrong time could cause massive crop failures, food spoilage, and other losses. Becasue of the catastrophic effects of supply curtailments, agriculture maintains a special place in Federal energy regulations.

Safeguards for agriculture are built into the National Emergency Petroleum Allocation Act and the Natural Gas Policy Act of 1978. (The latter is a key part of the National Energy Plan (NEP).)

These safeguards generally put the agricultural system, including food processors, first in line for energy supplies, should an energy allocation scheme be put into operation.

Assurance. The idea behind the NEP, passed last year by Congress, is to assure energy supplies, and soften sharp price increases. Boosted energy production, an emphasis on conservation, and substitutes for fossil energy are the tools the NEP uses. Energy prices in the long term will no doubt rise, but that would have been true with or without the NEP.

Farmers have been at the forefront in the battle to assure energy supplies for agriculture. Glimmering on the agricultural horizon is solar energy, waiting for the chance to provide the food system with a renewable energy resource.

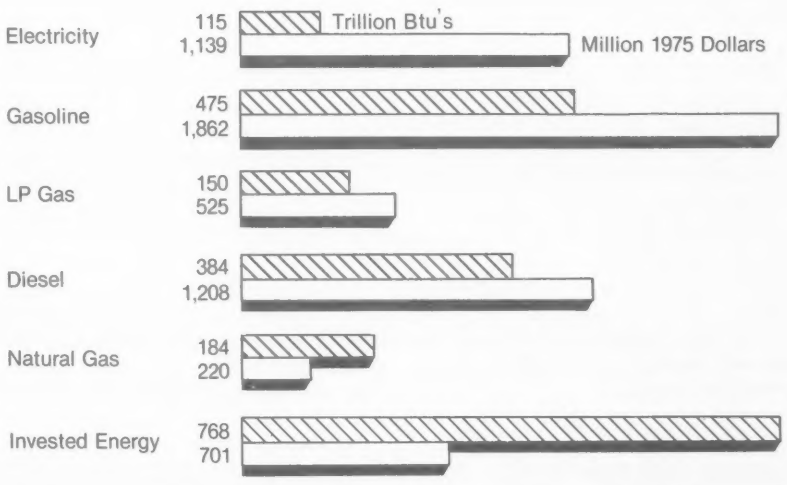
Farmers have also led the Nation in exploring the uses and manufacture of gasohol—gasoline mixed with alcohol made from farm products.

Power from Sol. As fossil fuels become harder to obtain, agriculture is turning to the sun. Solar power is a general heading, including solar radiation, ocean power, photovoltaics, and wind energy.

USDA has numerous programs underway to assist agriculture in the transition from fossil fuels to renewable resources. Among them:

- Researching and developing applications of solar, wind, and biomass energy.
- Demonstrating solar energy in livestock production.
- Demonstrating wind-generated electric power.
- Analyzing the economics of solar power for grain drying and other agricultural uses.
- Making it easier to use wood for heating—a form of biomass energy.
- Studying whether to use set-aside

1977 Energy Use on Farms by Fuel Type and Cost



acreage for production of energy crops.

• Studying the environmental problems associated with harvesting biomass for energy.

A treeless hill. This last category takes into account what could happen if, for example, someone harvested all the trees from an otherwise unused hillside. Severe water and wind erosion could result, which could be more damaging than it's worth. Research is underway to identify problem areas and to help farmers cope.

The involvement of USDA in solar energy programs was first specifically authorized by Congress in the 1977 Food and Agriculture Act. In the law, Capitol Hill made it clear that USDA is expected to encourage and develop the use of solar energy for both agricultural and nonagricultural life in rural America.

Energy profile. As part of the studies of USDA and energy experts over the past few years, the characteristics of farm energy have been found to be fairly clearcut:

• Farmers consume about 1 quadrillion (quad) Btu's of oil products in farm business operations each year, accounting for two-thirds of the direct energy use.

• Indirect energy use in the making of the most important farm chemicals—fertilizers and pesticides—takes another 0.8 quad.

• Energy invested in fertilizers far exceeds energy use in any single direct farm operation.

• Pumping irrigation water accounts for 20 percent of direct use, more than any other farming operation.

• Corn production takes about a fourth of all energy use in farming.

• The major export crops—corn, wheat, cotton, and soybeans—added together, use more than half the energy in crop production.

• Energy use in producing crops for export totals about one-half quad, but these crops generate enough income to pay for 9 quads of imported oil at today's prices.

• Almost half the demand for energy for agriculture comes from seven States—California, Illinois, Iowa, Kansas, Minnesota, Nebraska, and Texas.

Farming only a part. But even with all this energy consumption, only about 3 percent of the Nation's supply goes to raising crops and livestock. That's but a small part of the energy used for producing, processing, marketing, and consumption of farm and forest products. Altogether, agriculture-related operations use about 22 percent of America's energy supply.

[Based on *Energy Outlook for Fuel in 1979*, by R. Thomas Van Arsdall, USDA Office of Energy, and Patricia Devlin, National Economic Analysis Division; and on *Solar Energy and Agricultural Self-Sufficiency*, by Landy B. Altman, Science and Education Administration. Both papers were presented at the National Agricultural Outlook Conference, Nov. 13-16.]

The Energy in Farming

Agriculture grew increasingly dependent on energy over the past few decades. Those years saw fossil fuels plentiful and relatively cheap, and with them farmers were able to boost yields and production, while holding down other costs, such as labor.

Overall, agriculture has been pretty good about making the most of energy resources. Using energy, farmers have sought to make the most of what they have, an effort that's been highlighted by record production.

Farmers used energy for crop drying, irrigation, power for machinery, heating and cooling of buildings, and other agricultural operations where capital—money—could be substituted for labor.

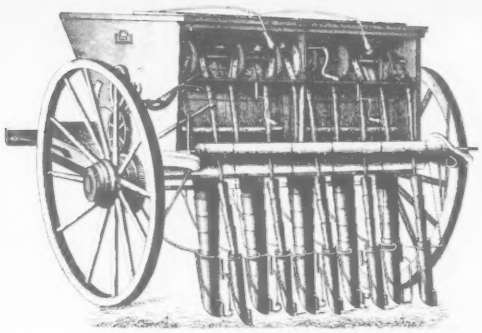
Meanwhile, farm prouction costs have soared. In 1975, they hit $75 billion, with an estimated 8 percent—$6 billion—going for energy. (Costs were $5 billion for fuels and electricity, and $1 billion for energy in manufacturing chemical fertilizers and pesticides.)

Farm dependence on energy, regardless of the cost, is not likely to ease in the future. As the world demands more food, farmers will need more energy. But farm energy sources may shift. Already, there are some leanings toward solar energy, biomass, gasohol, and other renewable energy sources.

The more these "new" energy sources can be made to pay off, the less likely it is that agriculture and the food system can be thrown off the track by energy supply disruptions.

[Based on special material from R. Thomas Van Arsdall, USDA Office of Energy.]

Less Time + Fewer Workers = More Output



The backbone of American farming is efficiency. Back when this century was in its toddling stage, farmers worked about 23 million hours a year. In 1977—65 years later—they labored fewer than 5 million hours.

And even though work hours plummetted, farmers combined machinery and other inputs to multiply production.

Economists use index numbers to show agricultural production and labor. Using 1967 as the base year, when all production was assigned an index of 100, you can figure that production in 1910 was 43. By 1977, the index for production had rocketed to 121, showing the output was more than a fifth larger than in 1967. The 1978 production index will about equal the 1977 record.

There are many reasons for the massive increases in output, coupled with the great drop in work hours. For one thing, we have fewer farmers than before. For another, few farmers use horses and mules for farmwork anymore.

Machines for animals. This kind of switch—from horses to horsepower—helped farmers boost the index for a key ingredient in efficiency: productivity.

Productivity is different from production. While production is the quantity of things produced, productivity is the amount of work hours that went into making them. Productivity can be measured by the amount of output per unit of input. So, the greater the output from a single unit of input, the greater the productivity.

Horsepower. A more graphic view of machine-power growth is in tractor horsepower. In 1910, there were less than 1 million horsepower in tractors, but last year there were an estimated 238 million. While the number of tractors has been slipping a little in recent years, the horsepower continues to rise—as does the output.

About 317 million acres of cropland were harvested in 1910, compared with 337 million in 1977. But during that time, farmers doubled total crop production.

Impressive. More recently, comparing 1976 and 1977, labor productivity gains were impressive, jumping 7 percent. Part of the gains were due, of course, to more favorable weather in many parts of the country, allowing farmers to do more work and achieve greater output for their efforts.

Much of the long-term increase in production can be traced to the use of such inputs as fertilizer, pesticides, other chemicals, and improved seeds, all things that go into farm production.

The volume of inputs used for farm production hasn't changed much in the last 2 decades. However, the mix has shifted, as farmers substitute more productive inputs for less productive ones.

For example, farm labor accounted for 27 percent of all inputs in 1960, compared with 14 percent in 1977. Machinery and chemicals' shares increased from 25 percent and 5 percent of all inputs in 1960, to 32 percent and 10 percent.

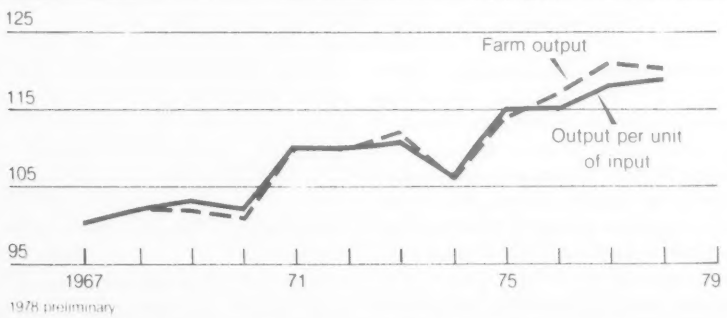
Uptrend. This shifting of the input mix has helped push the productivity index ever upwards. Farm output per unit of input was at 118 in 1977, a record level, and the index probably jumped again in 1978.

Meanwhile, this changing composition of resources has made farmers more dependent on the nonfarm economy. Today, purchased inputs account for nearly 60 percent of all resources used in production, compared with 40 percent in 1960.

[Based on *Changes in Farm Production and Efficiency, 1977*, by Donald D. Durost and Evelyn T. Black, National Economic Analysis Division.]

Farm Productivity

% of 1967



Agriculture in the Next Century

Farmers have often wished they could gaze into a crystal ball to foretell the future. But if they could, what would they see for the year 2000?

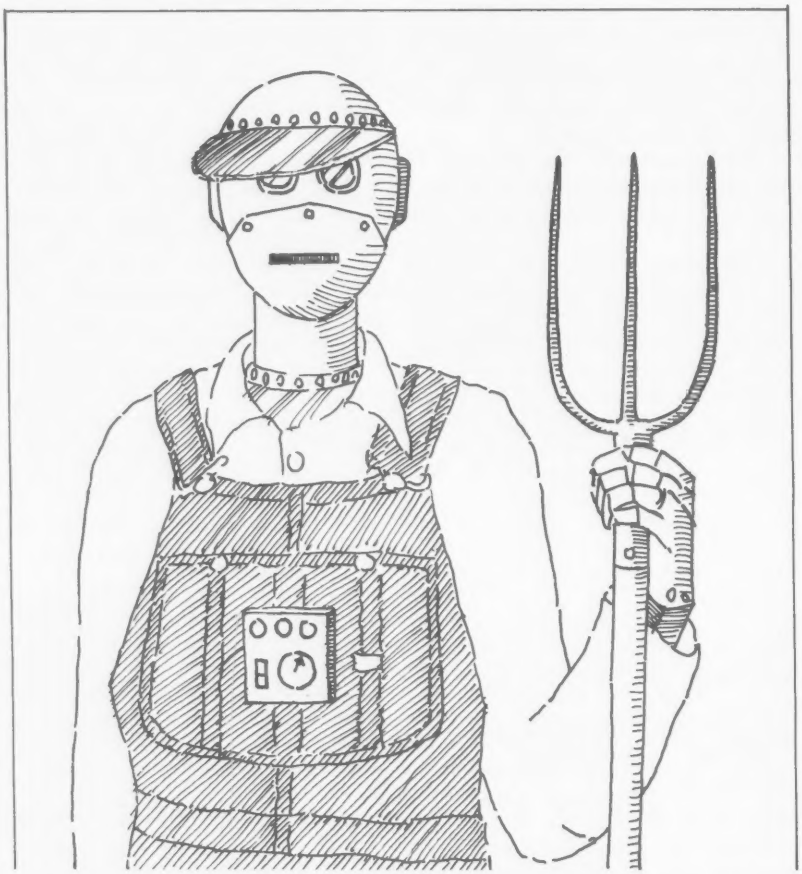
One possibility is that Americans will still be eating relatively well, while the great majority of the world's 7 billion people would be in need. (Currently, the world holds about 4 billion people.)

In this grim Malthusian world, the nations without enough food would be in constant struggle with the few well-supplied countries. Some agricultural forecasters envision this situation unless the world's food supply is increased dramatically, the population growth is brought under strict control, or nuclear war decimates the population.

A better view. A more placid view of the year 2000 is that the world—led by U.S. agricultural technology—will increase production by putting additional land into crops and livestock. The U.S. and the Food and Agriculture Organization (FAO) will encourage other nations to adopt the transferrable technology that has made American farmers the most productive in the world.

That productivity—whether measured by acres, man years, or units of production goods—took an unprecedented leap forward in the last quarter-century.

One of the reasons is our country's fortunate location. We are blessed with good soil, adequate rainfall, and a mild climate. But more than that, U.S. agricultural achievement has been the result of hard work and a reasonable belief by farmers that they could benefit from that labor.



Little change. At the time of the American Revolution, farming methods differed little from those at the time of the Roman Empire, although farmer-inventors soon began developing labor-saving machines. But it wasn't until the Civil War that the first American agricultural revolution occurred.

Labor shortages, high prices for farm products, and a seemingly unlimited demand for these items, led farmers to adopt the new horse-drawn machinery and to turn from self-sufficient to commercial farming.

At the same time, a series of agrarian reform laws promoted the family farm concept through the creation of homesteads in the U.S., land grant colleges, the Department of Agriculture, and a transcontinental railroad that put would-be farmers on the land

and returned their products to eastern markets.

Dramatic picture. Statistics dramatically show the changes that have taken place in American agriculture. For example, during the past 200 years, the number of farmers in the U.S. workforce has declined from more than 90 percent to less than 4 percent. Both farm population and a number of farms have fallen sharply since 1950—farm population, from about 23 million people to 8 million; and the number of farms, from 5.6 to 2.3 million.

Yet, total farm production, with yearly variations, has increased tremendously. Since 1950, agricultural production per man-hour has climbed at a rate of about 5.8 percent a year, compared with 1.9 percent for all other industries.

World War II brought another American agricultural revolution. Some of the causes were labor shortages, price guarantees for 2 years after the war, and urgent pleadings from the Government to increase production.

Technology advances. Farmers moved from horse-drawn to tractor-powered machinery and adopted a series of interrelated technologies. These included specialized machinery, improved (often hybrid) seeds and breeding stock, careful tillage, the exact application of fertilizer, productive use of water through irrigation or drainage, and the application of chemicals to control weeds, fungi, and insects.

Their use as a package led to a total increase in agricultural productivity that, combined, was greater than the increases resulting from any of the separate technologies. The idea was actually a systems approach to the problems of increasing agricultural activity.

Whether we can continue to increase productivity depends on how well the Nation uses its soil, water, and energy, and, of course, upon continued research.

Protecting the soil. The soil and its use has intrigued the Nation's farmers and reformers since the days of Thomas Jefferson. Enough is known today about conservation and fertilizers that each year the U.S. has been producing larger crops on fewer acres—more than 100 million acres were taken out of farming between 1950 and 1978.

However, despite the fewer acres, production actually increased under this period. Production has increased at a slightly slower rate in the 1970's than in the 60's, but this does not necessarily mean a decline in soil productivity. Most U.S. farmland is protected from loss of productivity through soil conservation practices.

Water essential. In addition to conserving soil, proper application of water on irrigated land is essential to increasing productivity. Although only 10 percent of our crop acreage is irrigated, it produces about 20 percent of the total U.S. harvest.

Until World War II, streams and rivers provided most of the water for irrigation, primarily in the Mountain and Pacific regions. Since then, wells have been the chief source—particularly in the Plains States. One-third of all water withdrawn from the total U.S. supply is used for irrigation.

The well runs dry. The extensive use of water from wells has caused problems. Too many acres have become virtually useless because of salinity—the accumulation of salt in the soil. And in parts of the Great Plains and desert Southwest, continuous pumping has reduced the water table to a point where it is too low and expensive to pump for irrigation.

An adequate supply of fresh water is essential to the continuation of agriculture, and more is needed than is presently available if production is to continue expanding. If more good-quality water could be made available, much of the desert acreage in the U.S. could be brought into production.

Waste water available. Reclamation of waste water and prevention of water pollution would make more water available for agricultural and other uses. The treatment of sewage in such a manner that its liquid content becomes inoffensive and nonpolluting is essential for its use, and the technology to do it is already here.

However, desalting sea and brackish water is the most probable way we will increase our water supplies. After all, the oceans do contain most of the world's water. The technology for converting sea water is available, but is more expensive than converting sewage effluent.

The key to an economical way of desalting sea water is in harnessing a virtually unlimited, low-cost energy supply. Nuclear and solar energy are available, but have not yet been harnessed or made economically feasible.

More energy needed. Obtaining a continuing supply of energy is one of

the problems farmers will face in the future—surely by the year 2000. American farmers are now dependent on fossil fuel to power their machines, heat their homes, and produce their fertilizer, particularly nitrogen. It would be impossible to reverse this system.

For instance, if we were to achieve 1978 farm production using 1916 methods, we would need about 61 million horses and 31 million farmworkers. Neither are available in such numbers, so production would have to be cut back to World War I levels—meaning many more people would be threatened with starvation.

To help the farmer and others meet their energy needs, the development of reliable, cheap energy resources is necessary.

Harnessing wind, tides. Using the rise and fall of the tides to generate electrical power is one idea. Harnessing the wind as a power source is another.

Geothermal energy is being used in a few places where a combination of geologic structure, volcanic heat close to the surface, and ground water permit hot water or steam to be obtained from wells.

Nuclear power holds great promise once the problems of radioactive waste disposal and the development of breeder reactors are solved.

Solar energy is potentially the most useful of all unconventional sources of energy. At present, however, there are problems involved in collecting, concentrating, and storing its energy.

Another revolution. If low-cost, abundant solar energy becomes available, it would have the potential of triggering the third American agricultural revolution and ending the threat of famine. Solar energy could be used to desalt sea water and pump that water to the arid regions of the world.

Besides the development of new energy sources, a number of known technologies could have significant impact on food productivity over the next several decades.

For example, research is being done to improve the photosynthetic efficiency of plants, including the enhancement of their carbohydrate formation process and their capacity to absorb nitrogen for protein synthesis. Work is also being conducted to increase plant growth by elevating atmospheric level of carbon dioxide.

Improved management. More efficient management of water and fertilizer and the adoption of total pest management systems offer opportunities to protect the environment and increase production at the same time. However, production of fertilizer and chemicals for pest management requires considerable energy.

Controlled environment or greenhouse agriculture—used more in Europe than the U.S.—will probably be confined mostly to high-value and specialty crops. Similarly, double-cropping and intensive cropping to increase annual yields per acre are practiced much more in Asia than in the U.S., but we may move in those directions.

An expanded use of minimum tillage is already underway. This practice reduces labor and machine costs, helps conserve the soil, and, more importantly, requires less energy.

New, better plants. The development of new plant hybrids continues, but a breakthrough with both soybeans and wheat comparable to that of the 1920's with hybrid corn is needed. The development of plants capable of withstanding drought, salinity, and cold would open land now closed to agriculture and increase production in other areas. It may also be possible to develop plants that lose less water through evaporation.

Some scientists believe we can induce regular multiple births in both sheep and cattle—known as "twinning."

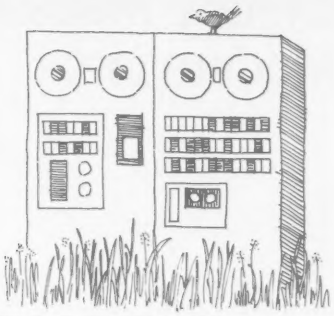
The list of things research and experimentation can do to extend the Nation's food supply is almost endless. Today's nutritional problems, along with the consumer's interest in the subject, make it essential that this research continue.

Way of life lost. The research mentioned previously has been scientific and technological. However, there are institutional questions that also demand thought and research.

It is possible, for example, that agriculture will lose its uniqueness. In the past, farming was a distinct way of life. Today, it's similar to life in a small town. Farming at one time was geared to self-sufficiency; now it's a commercial enterprise.

In the future, life in the country, town, and city may be blended further, with more people living in the country and working part- or full-time in the city. Or the opposite may be true—residing in the city and having garden plots in the suburbs or farmland away from the city.

A major problem facing the farm family over the next several years is that of financing entry into the occupation. The cost of land, whether



rented or purchased, and the cost of equipment are so high that a person or family can't enter farming without inheriting the farm or having strong financial backing.

New financing needed. It is apparent that a more effective institutional structure must be developed to finance families interested in renting or buying land to start farming. Otherwise, it will be difficult to have farms that are operated by the families who own them, or at least part of them.

Large corporation-owned farms operated by hired managers and workers are another alternative to the problem of investment capital. Such farms are not new in this country; they date back to the joint stock companies that first settled many of our colonies. At present, there are about 100 such corporations.

Large corporate farms account for a disproportionate amount of agricultural sales, mostly from fed cattle, poultry, and fruits and vegetables.

Large firms leave. Yet, some large companies have been getting out of farming. They are frustrated by their inability to control labor, weather, the market, or the terms of production. For example, when prices fall, the farmer—whether an individual or corporation—cannot discontinue operations until they rise again.

The family farm has an advantage in terms of management and labor. In times of stress, family members will work for low, or virtually no, immediate return just to keep the farm in operation.

Although the number of farm workers—both family and hired—is still declining, there is evidence that the longtime trend may be ending. It is known that the rural population is growing faster than the urban population and has been doing so for several years. This will persist if rural life continues to improve with roads, electricity, good schools, and other facilities. The trend for one or more family members to hold jobs in town will also continue.

Although the differences between rural and urban life may become less disparate over the next 20 years, there are sections of the Nation where some adjustments must continue if farm families are to have access to needed services.

Maintaining services. The problems of maintaining schools, county governments, and medical services in our more remote rural areas are becoming increasingly difficult as the farm population declines. Ways must be found to meet these difficulties.

More effective communications—such as the use of helicopters as school buses—may permit more school consolidations. If so, the trend away from the more rural areas could be reversed.

Farmers, of course, will continue to produce for the marketplace. A system of world reserves will provide an outlet in years of great surplus, which will be available to the Nation if needed in a time of shortage.

Most effective. No matter how we solve the land ownership question, the larger commercial farms will still be family operated, simply because that has proven to be the most effective system available for the production of food and fiber.

More than 10 years ago, then-Secretary of Agriculture Orville Freeman delivered a series of talks on agriculture in the year 2000. As he saw it, agricultural space satellites would supply the basic intelligence for agriculture. They would detect the differences in the soil; determine damage by diseases, insects, and drought; and assess crop stands. (Some of this has already begun.)

Bugs disappear. By that year, Freeman predicted, disease and insects would have been nearly eradicated by biological and specific chemical methods.

The farmer—seated in an air-conditioned farm office—would scan a computer printout, perhaps to get additional information from the cooperatively owned computer, then feed directions for his farm operations into the computer.

Field work would be carried out by automated machinery, as envisioned by Freeman, and supervised by television scanners mounted on towers. Robot harvesters would complete the farming operation with high-speed picking, grading, packaging, and freezing. The produce would then be automatically transported to warehouses.

Sounds good, but such a farm would seriously aggravate the problem of farm financing that's bad enough now. Can the human being become fully divorced from the land and still carry on productive farming? According to one ESCS expert, the answer is no. Chances are we will continue to reduce the physical drudgery of farming, but will still work the land, the crops, and the livestock.

[Based on the manuscript, "American Agriculture: 2000 A.D," by Wayne D. Rasmussen, National Economic Analysis Division.]

Dietary Message: Moderation

(EDITOR'S NOTE: The following article contains verbatim excerpts from a speech by Dr. D. Mark Hegsted, Administrator of USDA's Human Nutrition Center, at the National Food and Agricultural Outlook Conference last November.)

What dietary message should nutritionists send to the American public?

"The valid message is simply one of moderation," Dr. D. Mark Hegsted contended, "even though this tends to get lost in the arguments between those who find absolutely nothing to criticize about their product and those who exaggerate the undesirable effects of various products or constituents."

While Hegsted acknowledged that the specific of the nutrition message is debatable among experts—and some nutritionists even question whether there should be a general nutrition message—he contended that it's essential to offer the American public nutritional guidelines. Americans, as a whole, don't face a problem in obtaining enough nutrients. Instead, the challenge for U.S. nutritionists is to convince Americans to moderate their food intake.

Battle of the bulge. "Obviously, it is more difficult to devise diets that limit the consumption of good foods than to encourage the consumption of good foods, and still more difficult to get the public to consume these kinds of diets," he said.

As an example of the high intake of nutrients, most Americans eat much more protein than is apparently needed. Yet food advertising often stresses protein content.

"It sometimes appears that 'protein' and 'good nutrition' are almost synonymous in the public's mind," Hegsted lamented.

The ease of obtaining essential nutrients—and a case for moderation—is demonstrated by the lean diet of the British during World War II. Despite restrictions, they not only suffered no epidemics of deficiency disease, but the general health status of the population actually improved.

Even distribution. The wartime food restrictions distributed available foods more evenly, and lowered fat and sugar consumption.

Hegsted, who advocates issuing revised nutritional guidelines, disagrees with some nutritionists who argue that no general guidelines should be recommended because individuals have widely varied nutritional needs. That is, obese individuals may need very different advice from that offered as general guidelines.

In countering this argument, Hegsted contends that this is "the antithesis of prevention" which is the major point of any dietary advice. "Certainly we do not believe that we should withhold any dietary advice about nutrient content until an individual can be shown to have rickets, pellegra, or other deficiency diseases." For example, using standard medical statistics, consider a family of 10 who demonstrates an average susceptibility to fatal diseases.

Disease. Since about half of all U.S. men die of coronary disease, five family members are in danger of heart disease, two are susceptible to cancer, one risks diabetes, and two or three may suffer hypertension.

If the statistical probabilities are known, but the identity of individuals aren't known, how can the family feed itself to minimize the risk to each individual?

That is essentially the dilemma facing nutritionists. And the sensible solution, according to Hegsted, is to moderate intake of foods found to be generally risky to health when taken in excess: fat, sugar, salt, and cholesterol, while increasing portions of fruit, vegetables, and grain products.

"The American population deserves whatever advice or information is available which will allow them to minimize risk of nutritional disease," he said, "or, stated another way, to allow them to take full advantage of our generous food supply to promote optimum health."

Frustrations. Despite the nutritionists' frustrations in getting the message across to the public, Hegsted noted that "a great many Americans are now interested in modifying their diets."

To help the public in this desire, nutritionists need to know a great deal more "about why we eat what we eat," he said. This includes not only more information about how food habits are acquired, but also about "the sensory aspects of foods."

A different tack may be needed in nutritional education, he suggested, noting that nutritionists traditionally assume that if people understand dietary needs, they'll adjust their consumption to seek better health.

"We eat foods because we like them," Hegsted noted. "This involves flavor, texture, taste, smell, appearance, and probably other things. And our appreciation of these depends on past experience."

More research. Much greater research emphasis is needed to find a sensible way to predict the acceptability or desirability of foods. "All we know is that foods are different and we can devise many mixtures that are more or less acceptable than others."

By learning more about how or why food preferences develop, Hegsted said methods could be more effectively devised to change food habits.

The notion of changing America's eating habits is sometimes perceived as threatening by food industry executives. According to Hegsted, these critics could be overestimating the effect of modifying the nutritional standards because the effects would probably be subtle.

"Raising or lowering a dietary standard doesn't directly influence what we eat," he said. But changing standards may modify the "nutrition message."

Temperature changes. Hegsted compared the effect on the public of changing suggested nutrient intakes to the effects of an average daily temperature change of a few degrees over a year. While this change may profoundly affect the climate, most people could care less whether today's temperature is a few degrees above or below the forecast.

Similarly, most people vary their intake of many nutrients by 50 to 100 percent from day to day. Thus, despite the nutritionists' debates, the consequences of adjustments in the amount recommended are small.

In the same way, while the food industries and many nutritionists argue over modification of nutrition education, there may be a practical guideline for most consumers: Too much of anything is bad, and there are no good and bad foods—"everything depends upon how much we eat and what we eat with it," Hegsted suggested.

A solution may be to devise a "balanced presentation" to help consumers.

A sensible diet. "The great majority of consumers have little or no difficulty in getting enough essential nutrients if they have moderately sensible dietary habits, but many do consume in excess," he said. "Neither the nutritional educations which we have had nor commercial advertising have provided that kind of information."

Hegsted acknowledged that "all nutrition education is aimed at changing food consumption patterns. To the degree that we are successful, we will modify the markets for products.

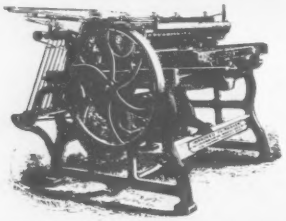
"But we also know that we will not be successful enough to produce any precipitous changes in the marketplace. Nutrition education is only one of the things—like cost, availability, etc.—which will modify consumption patterns."

While minimizing the effects of the "nutrition message" on the food marketplace, Hegsted stressed the need to change dietary standards.

"We do not establish dietary guides only when we have proof of where they should be set," he said. "We establish guidelines because we need guidelines."

[Based on the speech, "Perspectives in Nutrition," by D. Mark Hegsted, Administrator, Human Nutrition Center, USDA, at the National Food and Agricultural Outlook Conference, Washington, D.C., Nov. 15, 1978.]

Recent Publications



Single copies of the publications listed here are available free from *Farm Index*, Economics, Statistics, and Cooperatives Service, Rm. 482 GHI, 500 12th St., SW, U.S. Dept. of Agriculture, Washington, D.C. 20250. However, publications indicated by (*) may be obtained only by writing to the experiment station or university indicated. For addresses, see July and December issues of *Farm Index*. Publications marked with (#) may be purchased from NTIS, U.S. Dept. of Commerce, 5285 Port Royal Rd., Springfield, Va. 22161, at the price listed.

Changes in Farm Production and Efficiency, 1977. Donald D. Durost and Evelyn T. Black, National Economic Analysis Division. Stat. Bul.-612.

This report contains all historical data for the major statistical series on farm production, production inputs, and efficiency. It also provides the latest information for appraising changes in production, changes in farm inputs and practices, improvements in labor productivity, and progress in farm mechanization.

Economic Effects of a Prohibition on the Use of Selected Animal Drugs. Clark Burbee, William Gallimore, and William T. Boehm, National Economic Analysis Division. AER-414.

This study conducts an economic assessment of the impacts that might occur in the agricultural sector from adoption of current proposals to restrict the use of antibiotics or nitrofurans, and possible restrictions on the use of sulfa products in swine feed. Attention is focused on feed efficiency, growth promotion, and mortality, and how changes in these variables affect production costs, output, and product prices.

Prices and Price Indexes for Arkansas Farm Products, 1960-1977. Hilliard Jackson and Donald H. Von Steen, Arkansas Agricultural Experiment Station. Ark. Agr. Expt. Sta. Bul. 629, 1960.*

Changing patterns of production, marketing, and prices affect everyone—farmers, people in agribusiness, and consumers. This bulletin updates the index of prices for Arkansas that was first published in 1960.

An Analysis of U.S. Rice Distribution Patterns. Shelby H. Holder, Jr., and Alberta Smith, Commodity Economics Division AER-413.

This report is one of a series of studies that provide information on shifts and trends in U.S. rice distribution patterns. Information supplied by rice mills and repackagers from the latest complete USDA distribution survey are the basis for the 1974-75 data.

1977 Ohio Farm Income. David H. Boyne, Francis B. McCormick, Homer L. Carter, and Mark A. Evans, Department of Agricultural Economics, Ohio State University; with cooperation from ESCS. Department Series E.S.S. 575.*

This bulletin contains 1977 Ohio county cash receipts estimates and revised 1976 state estimates. County production estimates of various commodities are published annually in the Ohio Agricultural Statistics bulletin.

Housing Credit: A Rural-Urban Comparison. Hughes H. Spurlock and Ronald Bird, Economic Development Division. RDRR-6.

This report details the home mortgage situation in 1975, finding

that there was much less home mortage credit available in rural areas than urban areas that year. The authors discuss home financing, showing the participation by banks, savings and loans, the Farmers Home Administration, and other lenders.

Costs and Returns for Rice, 1975, 1976, and 1977, with 1978 Projections. Troy Mullins, Warren R. Grant, and Shelby H. Holder, Jr., Commodity Economics Division. Stat. Bul.-613.

The costs of rice production in the U.S. increased appreciably in most of the major rice-growing areas between 1975 and 1977. Except for planting seed and fertilizer, for which prices were unusually high in 1975, all other direct input items were much more expensive in 1977. In 1978, the rate of the price increases eased to a level comparable with that of the overall rate of inflation.

Economic Trends

[1] Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates. [2] Revised to adapt to weighting structure and retail price indexes for domestically produced farm foods from the new Consumer Price Index for all urban consumers (CPI-U) published by the Bureau of Labor Statistics. [3] Annual and quarterly data are on a 50-State basis. [4] Annual rates seasonally adjusted third quarter. [5] Seasonally adjusted. [6] As of March 1, 1967. [7] As of February 1. [8] As of Nov. 1. *Beginning January 1978 for all urban consumers.

Source: USDA (Agricultural Prices, Foreign Agricultural Trade, and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Monthly Retail Trade Report, and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force, Wholesale Price Index, and Consumer Price Index).

Item	Unit or Base Period	1967	1977 Year	1977 Oct.	1978 Aug.	1978 Sept.	1978 Oct.
Prices:							
Prices received by farmers	1967=100	—	183	177	210	215	217
Crops	1967=100	—	192	178	202	203	200
Livestock and products	1967=100	—	175	176	217	226	232
Prices paid, interest, taxes, and wage rates	1967=100	—	202	201	220	223	224
Prices paid (living and production)	1967=100	—	196	196	214	216	218
Production items	1967=100	—	200	198	217	220	220
Ratio[1]	1967=100	—	90	88	95	96	97
Producer prices, all commodities	1967=100	—	194.2	196.3	210.4	212.3	215.0
Industrial commodities	1967=100	—	195.1	199.1	211.2	212.4	214.7
Farm products	1967=100	—	192.5	182.0	210.3	215.3	220.7
Processed foods and feeds	1967=100	—	186.1	184.3	201.8	205.5	209.0
Consumer price index, all items*	1967=100	—	181.5	184.5	197.8	199.3	200.9
Food*	1967=100	—	192.2	194.4	215.4	215.6	216.8
Farm Food Market Basket:[2]							
Retail cost	1967=100	—	179.2	179.2	204.3	203.9	205.1
Farm value	1967=100	—	178.1	178.1	212.0	215.8	217.4
Farm-retail spread	1967=100	—	180.0	179.9	199.6	196.5	197.6
Farmers' share of retail cost	Percent	—	38	38	39	40	40
Farm Income:[3]							
Volume of farm marketings	1967=100	—	125	181	118	126	172
Cash receipts from farm marketings	Million dollars	42,817	96,084	11,366	8,784	9,341	12,846
Crops	Million dollars	18,434	48,519	6,824	3,995	4,503	7,196
Livestock and products	Million dollars	24,383	47,565	4,542	4,789	4,838	5,650
Gross income[4]	Billion dollars	49.9	108.1	—	—	122.5	—
Farm production expenses[4]	Billion dollars	38.2	88.0	—	—	96.0	—
Net income before inventory adjustment[4]	Billion dollars	11.7	20.1	—	—	26.5	—
Agricultural Trade:							
Agricultural exports	Million dollars	6,380	23,671	1,705	2,392	2,267	2,665
Agricultural imports	Million dollars	4,452	13,459	855	1,033	1,116	1,229
Land Values:							
Average value per acre	Dollars	[6]168	[7]450	[8]471	[7]490	—	[8]528
Total value of farm real estate	Billion dollars	[6]189	[7]482	[8]505	[7]524	—	[8]566
Gross National Product:[4]	Billion dollars	796.3	1,887.2	1,916.8	—	—	2,141.4
Consumption	Billion dollars	490.4	1,206.5	1,214.5	—	—	1,357.7
Investment	Billion dollars	120.8	297.8	309.7	—	—	350.6
Government expenditures	Billion dollars	180.2	394.0	399.5	—	—	439.6
Net exports	Billion dollars	4.9	−11.1	−7.0	—	—	−6.6
Income and Spending:[5]							
Personal income, annual rate	Billion dollars	626.6	1,529.0	1,577.0	1,730.1	1,743.0	1,764.2
Total retail sales, monthly rate	Billion dollars	24.4	59.0	60.7	65.9	66.2	65.9
Retail sales of food group, monthly rate	Billion dollars	5.8	13.0	13.2	14.4	14.6	14.4
Employment and Wages:[5]							
Total civilian employment	Millions	74.4	90.5	91.4	94.6	94.9	95.2
Agricultural	Millions	3.8	3.2	3.2	3.4	3.4	3.4
Rate of unemployment	Percent	3.8	7.0	6.8	5.9	6.0	5.8
Workweek in manufacturing	Hours	40.6	40.3	40.5	40.4	40.8	40.6
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	5.67	5.82	6.16	6.28	6.30
Industrial Production:[5]	1967=100	—	137.1	138.9	147.0	147.7	148.4
Manufacturers' Shipments and Inventories:[5]							
Total shipments, monthly rate	Million dollars	46,487	111,256	114,091	127,871	127,842	—
Total inventories, book value end of month	Million dollars	84,527	179,714	179,301	192,882	194,071	—
Total new orders, monthly rate	Million dollars	47,062	112,842	117,331	130,952	131,372	—

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